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Letter to the Editor

Phenotype of Maternal UPD(14)

To the Editor:

Recently Papenhausen et al. [1995] reported on a case of maternal uniparental disomy 14 in a woman with normal phenotype and 45, XX,-14,-14,+t(14q14q) karyotype. Previous to this eight cases of maternal UPD(14) had been reported, all with an abnormal phenotype [see Ledbetter and Engel 1995 for review]. Two of these previous cases were also associated with an isochromosome. However, in the t(14q14q) case presented by Papenhausen et al. [1995], the authors present molecular results which did not distinguish between maternal uniparental disomy, i.e., an isochromosome, and biparental inheritance, i.e., Robertsonian translocation. The father was unavailable for analysis making it difficult to establish lack of paternal inheritance. Although the patient was homozygous at the only two loci examined, many more markers would need to be examined to exclude that this was not due to chance sharing of alleles between the two parents. As this is the only report of UPD(14) with a normal phenotype, the interpretation of maternal UPD(14) in this case needs to be seriously questioned.

A Robertsonian translocation occurring between the maternal and paternal 14s cannot be cytogenetically distinguished from an isochromosome. Strong evidence indicates that both occur as post-fertilization errors and not in meiosis [Robinson et al., 1994]. Since such chromosomes generally derive from an initially normal 46-chromosome zygote, isochromosome formation will normally result in trisomy. A cytogenetically balanced karyotype in the presence of an isochromosome requires the additional loss of one parental homologue, whereas Robertsonian translocation formation between the maternal and paternal homologues does not. Both biparental or uniparental inheritance are commonly observed in balanced homologous translocation carriers and there is not yet enough data to conclude which is more common in this situation [Robinson et al., 1994].

Maternal and paternal UPD for distal chromosome 12q in mice are each associated with early embryonic lethality [Cattanach and Jones, 1994]. This region is homologous to human chromosome 14q and makes an imprinting effect for both parental chromosomes probable. While the possibility of a case of UPD(14) with a completely normal phenotype is important to consider, it is premature to conclude that such a case exists and it will be of interest to look further for such examples.

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